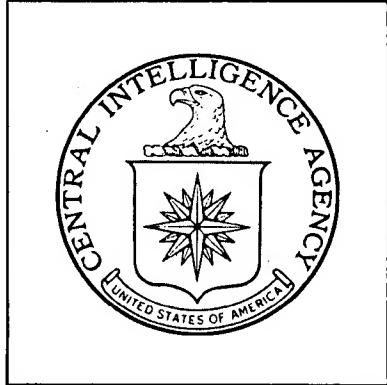


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**Industrial Facilities  
(Non-Military)**

**DIRECTORATE OF  
INTELLIGENCE**

*Basic Imagery Interpretation Report*

Ching-tao Chemical Fertilizer Plant

Ching-tao, China



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DATE JANUARY 1969

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IMAGERY ANALYSIS SERVICE

RCS - 13/0078/69

## INSTALLATION OR ACTIVITY NAME

Ching-tao Chemical Fertilizer Plant

## COUNTRY

CH

## UTM COORDINATES

## GEOGRAPHIC COORDINATES

51STL638104

36-12-10N 120-22-40E

## COMIREX NO.

WAC-PIC NO.

None

0381-41C

## MAP REFERENCE

US Naval Oceanographic Office. USATC 200, Sheet M0381-24HL. 4th edition. Apr 68.  
Scale 1:200,000 (SECRET)

## LATEST IMAGERY USED

## NEGATION DATE (If required)

Not Required

## ABSTRACT

The Ching-tao Chemical Fertilizer Plant was in an early stage of construction in August 1962. By November 1964, all major facilities for soda ash production were completed, and the plant was at least partially in operation. A second phase of construction, which included the probable ammonia production facilities, was started between October and December 1966, and these facilities were in operation by August 1967. The principal product of this plant is soda ash, produced by a modified Solvay process. Ammonium chloride fertilizer could be obtained as a by-product; however, this is considered uneconomical, and there is photographic evidence that the ammonium chloride is being treated to recover the ammonia instead. On all photo coverage since October 1965, the plant appears to be operating at a high rate of production.

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## INTRODUCTION

The Ching-tao Chemical Fertilizer Plant is located on the Shantung Peninsula approximately 8 nautical miles (nm) north-northeast of the center of Ching-tao. This plant is part of a partially walled industrial complex which also contains two unidentified processing plants, a brick and tile plant, a transformer substation, and an administration and support area (Figure 3). In turn, this complex is a small segment of the highly industrialized area which lies along the eastern edge of the Chiao-chou Wan (Bay) and extends northward approximately 6.5 nm from the edge of Ching-tao (Figure 1).

The only access road into the chemical plant is through the administration and support area of the complex. Rail service into the plant is provided by a spur from the main rail line between Ching-tao and Lan-tsun.

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**BASIC DESCRIPTION**Physical Features

The plant is a modern, well-designed soda ash plant. It is essentially rectangular in shape, has maximum dimensions of 3,285 by 880 feet, and occupies 55 acres. The chemical plant is not separately secured, and the complex of which it is a part is only partially secured by walls.

Operational Functions

The primary function of this plant is the production of soda ash by a modified Solvay process. In practice, the process includes the treatment of a saturated salt solution with ammonia gas and then saturating the resultant solution with carbon dioxide. A suspension of sodium bicarbonate in an ammonium chloride solution is thus formed. After filtering, the sodium bicarbonate is dried and calcined to form soda ash. The ammonia can then be recovered by treating the filtrate with lime and steam which liberates the ammonia in the gaseous form and produces a waste solution of calcium chloride.

It has been reported that ammonium chloride for use as a fertilizer is produced as a by-product of soda ash production at this plant. However, the soda ash process involved is generally considered to be uneconomical unless the ammonia is recovered. Prior to August 1967, the ammonia used in the process was shipped into the plant by railcar which would probably prohibit fertilizer production. After August 1967, the probable ammonia production facilities appeared to be in operation which would enhance the possibility of ammonium chloride fertilizer production because of the more economical supply of ammonia. However, it should be noted that the continual discharge of calcium chloride waste, which is very distinctive on photography, indicates that the ammonia is probably still being reclaimed for the soda ash process even after the probable ammonia production facilities went into operation.

The raw materials used at this plant are coal, limestone, salt, and probably natural gas for ammonia production.

Chronology

August 1962 to October 1965 1/ - The plant appeared to be in the early stages of construction when first studied on photography of August 1962. Photography of November 1964 showed the soda ash plant to be at least partially in production with all major facilities completed. Some rail traffic, stockpiles of raw materials, and minor amounts of waste material at the disposal area were evident. The plant appeared to be in full operation by October 1965.

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December 1966 - The only significant construction activity in the plant was at the probable ammonia production facilities where the compressor building and the probable reform unit were in the very early stages of construction. There was no indication of construction in this area on photo coverage of October 1966. In the soda ash production area, a protective covering/building was constructed in the salt storage area, and a shed roof that extends over the rail tracks was attached to the packing and shipping building.

August 1967 - The facilities in the probable ammonia production area and the pipelines that join it with the soda ash facilities were completed. Atmospheric emissions and the filled gasholder indicated that the probable ammonia production area was in operation. Lack of raw material stockpiles would indicate that if ammonia is being made, the necessary hydrogen is being obtained by the reforming of natural gas.

December 1967 - The only changes noted were the addition of one brine preparation tank and the beginning of construction on an addition to the packing and shipping building.

June 1968 - The addition to the packing and shipping building was completed. No other significant changes in facilities were noted.

#### Operational Status

On all photo coverage from October 1965 through June 1968 the soda ash production area appeared to be operating at a high level. This was indicated by stockpiles of raw materials, by atmospheric emissions, by railcar and vehicular traffic, and by the discharge of waste materials into the nearby bay.

The probable ammonia production facilities appeared to be in operation on all missions from August 1967 through June 1968. This was shown by atmospheric emissions and by the filled position of the gasholder. No tank cars have been observed at the liquid ammonia unloading, handling, and storage facilities since this area went into operation. This would tend to confirm that this area is for ammonia production.

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REFERENCES

Maps

US Naval Oceanographic Office. U.S. Air Target Chart 200. Sheet M0 381-24HL,  
4th edition, Apr 68, Scale 1:200,000 (SECRET)

Documents

- I. CIA/IAD. PIR 75051/66, Soda Ash Plant, Tsing-tao, China, Oct 66,  
(TOP SECRET RUFF)

Requirement

EXSUBCOM - BR-N/002-69

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